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CANCER IN EARLY LIFE.

Cancer is so often associated with adult life that most persons do not know that a considerable number of these deaths occur among children and adolescents; and that, for certain parts of the body, cancer actually occurs almost as frequently in children and adolescents as in adults.

In a study of 90,175 deaths from cancer among Metropolitan Industrial policyholders in a period of twelve years, it was discovered that 1,910 were those of persons under 25 years. The type of malignant growth known as sarcoma was responsible for most of these deaths of young people.

The organs or parts of the body most frequently attacked by malignant growths in early life were the brain, the bones, the kidneys and suprarenals and the lung and pleura. One-third of all brain cancers occurred among persons under 25; of bone cancers and those of the kidneys and suprarenals, 25 per cent. were under 25; and of the lung and pleura, 12 per cent.

In the case of brain cancer, particularly, diagnosis based on clinical symptoms is uncertain and the percentage of error is high. It is more than possible, however, that such errors are counterbalancing (or nearly so) and that the cancerous nature of brain lesions is undiscovered in fully as many cases as the cause of death is erroneously certified as due to cancer. One of the foremost among American authorities on cancer, Dr. FRANCIS CARTER WOOD of the Crocker Institute of Cancer Research, states that malignancy in the brain is often demonstrated on autopsy in instances where it had not been diagnosed clinically, while, on the other hand, lesions which appear, clinically, to be malignant growths, prove on autopsy to be abscesses rather than tumors. These errors of diagnosis,

moreover, are as common to one age group as to another and do not in any way invalidate our figures as to the relative frequency of deaths at different periods of life. It is obvious that more autopsies and more diagnoses based on microscopic findings are needed to clear up this subject.

It has been recognized, also, that bone cancers are often associated with anomalies in the growth and development of the bones, which accounts, doubtless, for their frequent occurrence in children.

Tumors of the kidney are divided by specialists into two distinct groups, one of which occurs almost entirely among children. These are complicated tumors which are difficult to classify and may be called, even by experts, either sarcoma or carcinoma. Many of them have to be thrown into a group of tumors arising from congenital remnants as they show elements evidently derived from embryonic kidney structures, embryonic nerve structures, etc. These data offer some explanation of the high prevalence of kidney malignancy among children.

The frequency of cancer of the suprarenal glands in young children, and even in infants, has been recognized by eminent authorities, one of whom states that 34 per cent. of his cases occurred in infancy and childhood.

Even when all proper reservations are made as to chance for faulty diagnosis, without autopsy or miscroscopic confirmation, the fact remains that the frequent occurrence of cancer in early life is an important phenomenon, and this is realized by comparatively few laymen.

CANCER A GREATER MENACE TO LIFE THAN TUBERCULOSIS.

Supplementing the preceding article, it will come as a further surprise to most persons to be told that at the present time a man or a woman is more likely to die of cancer than of tuberculosis. This will appear, at first thought, as a paradox in statistics, because the deathrate from tuberculosis is, as yet, a little higher than that for cancer. In 1922, for example, the tuberculosis deathrate in the Registration Area was 97 per 100,000, while that from cancer was 87. Nevertheless, it is true that a child having once reached 10 years of age is, according to present indications, in greater danger of dying ultimately from cancer than from tuberculosis. The explanation of this somewhat astonishing statement lies in the fact that tuberculosis claims its victims heavily in early adult life, whereas

cancer does not began to do its most deadly work until middle life. In an actual population, tuberculosis has relatively more material to work on than cancer, and the proportion of the two deathrates does not represent the "betting odds" that a child of 10, for example, will eventually die of tuberculosis or of cancer, as the case may be. These odds can be calculated by the construction of a "life table," and by then segregating the tuberculosis and cancer deaths from all deaths, and constructing truncated life tables with the remainder.

Probability of Dying Eventually of Cancer and of Tuberculosis at Selected Ages. Figures Based Upon Experience of United States Registration States, 1922.

AGE	CANCER		TUBERCULOSIS		PER CENT. CANCER OF TUBERCULOSIS PROBABILITY	
	Males	Females	Males	Females	Males	Females
10	.0837	.1132	.0684	.0606	122	187
15	.0844	.1142	.0685	.0599	123	191
20	.0857	.1160	.0665	.0554	129	210
25	.0874	.1183	.0613	.0483	142	245
30	.0891	.1206	.0556	.0416	160	290
35	.0910	.1225	.0502	.0361	181	339
40	.0929	.1235	.0450	.0314	206	393
45	.0947	.1225	.0395	.0275	240	327
50	.0957	.1193	.0344	.0242	278	493
55	.0955	.1142	.0295	.0213	324	537
60	.0928	.1064	.0245	.0189	379	563
65	.0878	.0970	.0197	.0162	445	600
70	.0792	.0847	.0144	.0129	550	656
75	.0664	.0712	.0100	.0096	664	742
80	.0530	.0588	.0066	.0059	805	995
85	.0418	.0485	.0043	.0041	1002	1182

At age 10, for males, the probability of dying eventually from cancer was .0837. That is to say, of 100 males at that age more than 8 will eventually die from cancer. The probability of eventual death from tuberculosis, on the other hand, was only .0684, which indicates that less than 7 out of 100 will die from tuberculosis. The cancer probability for males was, therefore, 22 per cent. in excess of that for tuberculosis.

For females at age 10 the measure of cancer probability was .1132 and for tuberculosis .0606. Here the cancer probability was 87 per cent. in excess of the chance of eventual death from tuberculosis.

The excess of the probability measure for cancer over that for tuberculosis increases decidedly with advancing age. At age 40,

among males the chance of dying eventually from cancer is twice as high as for tuberculosis. For females at this age the cancer hazard in after life is nearly four times that for tuberculosis. With advancing age the figures for males rapidly tend to approach those for females. The table on page 3 shows the probability of dying eventually of cancer and of tuberculosis, for males and females, according to data for the United States Registration States of 1922.

With a rising cancer deathrate and a falling tuberculosis deathrate in prospect for the immediate future, we may expect a greater disparity in the figures for cancer and tuberculosis probabilities. The control of tuberculosis has engaged public attention for many years. Annually, millions of dollars have been raised for purposes of public education, for providing sanatorium facilities and for effective research into tuberculosis. At present, provisions for cancer research, diagnosis and treatment are meagre in comparison with the magnitude of the task and the importance of cancer as a source of diminished longevity and of intense suffering. The purpose of this note is to emphasize the real importance of the cancer burden and to suggest that funds and facilities for research, diagnosis and treatment be increased to a degree comparable at least with the expenditures of funds and energy given to tuberculosis control.

MORTALITY RECORD OF THE FIRST NINE MONTHS OF 1924.

Judged by the health record of the first nine months of 1924, it is highly probable that the deathrate for the year 1924 will be considerably lower than for any prior year. This is indicated by the experience of more than fifteen million Industrial policyholders of the Metropolitan Life Insurance Company.

Among the white policyholders, the deathrate for all causes was but 8.2 per 1,000, which may be compared with 8.8 for the corresponding period of 1923, 8.4 in 1922, and 8.2 in 1921. As a matter of fact, however, the 1924 figure reflects an even more favorable condition than did the identical rate recorded at this time in 1921. The reason is that in 1921 no insurance was written on infant lives, a class of business in which the deathrate is higher than at any other age. With the mortality among infants omitted, the figure among white policyholders this year would stand ut as the most favorable in the history of the industrial populations of the United States and Canada.

Unfortunately, the experience among the colored population has not been so favorable. This year's deathrate of 15 per 1,000 is identical with that in 1923 and considerably higher than the 14 per 1,000 recorded in 1922 and 13.5 in 1921. A number of diseases for which marked improvement has been registered among the whites have either failed of corresponding improvement among the colored or have shown no progress at all.

Among the favorable developments of the nine months' period may be noted a further decline in the deathrate for typhoid fever. There is every evidence at this time that a new minimum deathrate will be established this year. Diphtheria is another disease in which the mortality record shows very considerable improvement, as compared with past years. Influenza, which showed more or less epidemic prevalence both in 1923 and 1922, has registered only about half the mortality this year, to date, that it did during the first nine months of 1923.

A favorable tuberculosis death record is again in evidence and there now remains no doubt that another decline to a new minimum will be recorded in 1924. Among the white population the drop in the deathrate will be a most gratifying one, as indicated by this year's figure, for nine months, of 87.9 per 100,000, showing a decline of 10 per cent. from the rate of 97.7 at the end of September in 1923, and of 13 per cent. as compared with 101.0 at the same time in 1922. The drop in the tuberculosis rate among colored persons has not been so large, but here, too, the trend is distinctly downward.

Organic disease of the heart and cancer during the past few years have been showing a downward tendency among the whites, in direct contrast to the upward trend among the colored. Cerebral hemorrhage also shows a falling rate among the whites, with a practically stationary figure among the colored population. Chronic nephritis is another disease in which the downward tendency for the whites is not reflected in the record for colored persons.

One of the outstandingly favorable items in the year's health record, to date, is the continued decline among white women in the deathrate from puerperal conditions. Here again, the figures for the colored show not only a less favorable record, but an actual increase over those in evidence at this time last year—not only for all puerperal conditions combined, but for puerperal septicemia, albuminuria and for other diseases incidental to pregnancy and childbearing.

The table on page 7 shows a considerable decline in the mortality from lobar pneumonia this year, but this is accompanied by much higher deathrates for bronchopneumonia both among the white and colored experience. The relatively high figures for bronchopneumonia are incidental to the increased number of infants insured this year. The apparent increase in the mortality from diarrhea and enteritis has been due to the same factor.

Deaths from chronic alcoholism numbered 342, corresponding to a deathrate of 2.9 per 100,000. During the period ended with September, 1923, there were 323 deaths with a rate of 3.0 per 100,000. It is now fairly well assured that there will be no rise in the death-rate from alcoholism this year, as compared with last, and that for the present, at least, the peak in the rise which has been observed since 1920, has been reached. Cirrhosis of the liver, which is closely associated with alcoholism, caused 673 deaths, as compared with 630 during the first nine months of last year. There were recorded only 13 deaths from wood and denatured alcohol poisoning as compared with 22 during the corresponding period of last year.

The record for violent deaths is encouraging. Suicide mortality shows improvement for both the white and colored population. The homicide situation shows a distinct improvement among our white policyholders; but, here again, the record for the colored is a bad one, with the rate much higher than that for the first nine months of 1923 and 1922. Fatal accidents have been fewer this year than last, although there have been more accidental drownings and a few more automobile fatalities. As noted, however, in the September BULLETIN, the rate of increase in automobile accidents appears to be decreasing, and it is hoped that this year will close with a very small increase, if any, over the figure for 1923; and that, further, the crest of the wave will have passed with the present year.

Deathrates per 100,000 Persons Exposed, First Nine Months of 1922, 1923 and 1924 Compared. By Color for Principal Causes of Death. Industrial Department, Metropolitan Life Insurance Company, Premium-Paying Business.

Cause of Death	Deathrates per 100,000 Persons Exposed					
	White			Colored		
	Jan.-Sept. 1924	Jan.-Sept. 1923	Jan.-Sept. 1922	Jan.-Sept. 1924	Jan.-Sept. 1923	Jan.-Sept. 1922
All Causes of Death	823.1	880.0	842.8	1496.2	1495.2	1397.9
Typhoid fever	3.2	4.2	4.4	9.2	10.2	10.2
Measles	9.4	11.6	5.1	6.0	10.3	2.0
Scarlet fever	5.2	5.1	5.5	.8	1.3	.7
Whooping cough	7.3	7.3	2.6	13.5	11.9	3.6
Diphtheria and croup	13.7	15.5	16.7	4.5	5.0	7.4
Influenza	13.9	32.9	22.5	38.7	69.6	47.4
Meningococcus meningitis	.7	.8	.7	.8	.5	.4
Tuberculosis—All forms	87.9	97.7	101.0	241.4	251.4	254.4
Tuberculosis of respiratory system	77.7	88.4	91.3	216.5	229.0	234.5
Tuberculosis of the meninges, etc	5.3	4.6	4.4	7.7	6.4	5.4
Other forms of tuberculosis	4.8	4.6	5.3	17.2	15.9	14.5
Cancer	68.6	71.4	72.9	70.6	67.8	68.8
Diabetes	14.4	17.2	*	15.7	14.7	*
Cerebral hemorrhage; apoplexy	53.7	57.0	59.8	95.8	96.2	95.2
Organic diseases of the heart	110.1	120.9	122.9	207.0	205.5	193.4
Total respiratory diseases	92.5	92.5	86.0	193.7	177.9	145.2
Bronchitis	4.9	5.6	5.6	9.4	10.1	11.4
Bronchopneumonia	36.5	30.6	27.1	62.5	45.4	35.8
Pneumonia—lobar and undefined	43.4	48.4	45.7	109.7	110.5	86.7
Other diseases of respiratory system	7.7	7.9	7.6	12.1	12.0	11.3
Diarrhea and enteritis	30.9	26.0	10.8	32.0	25.6	13.8
Under 2 years	26.0	20.5	5.1	22.6	17.1	3.8
2 years and over	4.9	5.4	5.7	9.4	8.5	10.0
Acute nephritis	4.7	4.8	5.3	16.1	14.7	17.2
Chronic nephritis	57.6	64.6	64.6	114.5	113.7	118.5
Total puerperal state	15.8	17.6	18.7	26.4	23.4	27.0
Puerperal septicemia	5.8	6.6	7.0	10.3	9.6	12.1
Puerperal albuminuria & convulsions	4.1	4.1	4.6	6.9	5.7	6.0
Other diseases of puerperal state	5.8	6.9	7.0	9.1	8.2	8.9
Total external causes	69.9	72.6	69.2	112.0	111.2	94.1
Suicides	7.1	8.0	8.3	4.9	5.2	5.0
Homicides	2.8	3.4	3.6	35.8	31.9	26.0
Accidental and unspecified violence	59.9	61.2	57.2	71.3	74.1	63.1
Accidental drowning	8.1	8.0	8.5	9.5	7.1	10.1
Automobile accidents	14.5	14.3	13.2	13.5	12.0	7.8
All other and ill-defined causes of death	163.8	160.2	174.1	297.6	284.4	298.5

*Not available.

MEASLES IN RELATION TO SEASON.

In the North Temperate Zone, measles incidence, and the measles deathrate per 100,000 of population, reach their maxima in the Spring; the lowest points are in the late Summer and early Fall.

It is not generally known, however, that the fatality rate of the disease, *i.e.*, deaths per 100 cases, follows precisely the opposite course—the maximum case-fatality rates occur in August and September and the minimum in March and April. Certain index-numbers of the seasonal incidence of measles morbidity, mortality and case-fatality are shown in the chart on page 9 .

These preliminary results suggest further inquiry into the clinical characteristics of measles. Is measles more frequently complicated by fatal bronchopneumonia in the late Summer than in the Spring? This leads to inquiry into the seasonal dispersion and virulence of infecting organisms, the relative frequency of involvement of the respiratory circulatory, renal and aural tracts, and into the case-fatality of these several types of complications. That little progress has been made in the application of clinical studies in measles is shown by the lack of improvement in the case-fatality rates for measles in the present series. There has been no appreciable slackening of an indicated case-fatality rate from a figure of 2.9 deaths per 100 cases between 1910 and 1923.

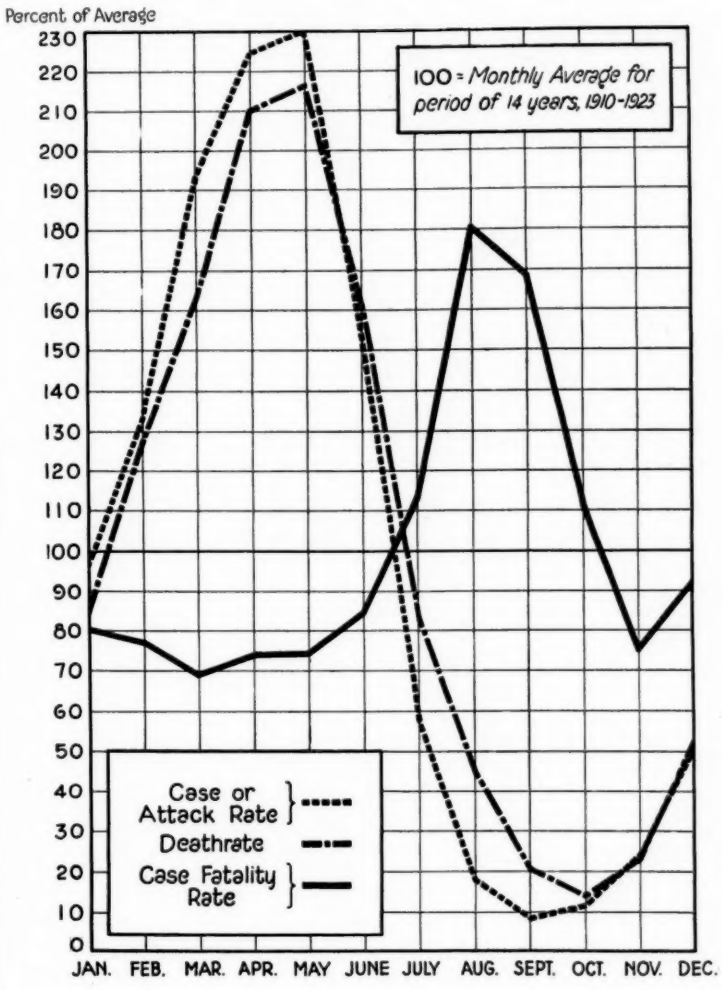
In the following table we show the data upon which the chart for measles on page 9, was based:

Measles in Relation to Season. New York City, 1910 to 1923.

MONTH	INDEX EXPRESSED IN PER CENT. OF RATE IN AVERAGE MONTH OVER PERIOD OF 14 YEARS			CRUDE RATES PER 100,000 OF POPULATION ON ANNUAL BASIS		DEATHS PER 100 CASES
	Case-rate	Deathrate	Fatality-rate	Case-rate	Deathrate	
January	96.2	85.0	80.4	491	9.30	2.32
February	133.0	127.0	77.0	680	13.84	2.22
March	193.2	163.0	69.0	987	17.84	1.99
April	224.3	210.0	73.9	1146	22.91	2.13
May	229.4	216.0	74.2	1172	23.64	2.14
June	152.7	161.0	84.3	780	17.54	2.43
July	57.4	83.0	113.4	293	9.07	3.27
August	18.1	45.0	180.3	92	4.93	5.20
September	8.5	21.0	168.5	43	2.25	4.86
October	11.6	14.0	111.7	59	1.51	3.22
November	24.0	23.0	75.2	122	2.51	2.17
December	51.6	52.0	92.2	263	5.67	2.66

SEASONAL INDICES FOR MEASLES

NEW YORK CITY, 1910 TO 1923



HEALTH RECORD FOR SEPTEMBER, 1924.

Health conditions in September were not as favorable as for the preceding months of 1924. The deathrate rose sharply to 8.3 per 1,000 from the August figure of 7.3, and the mortality was higher by 6.1 per cent. than that for September, 1923. There were more deaths, as compared both with August, 1924, and with September of last year, from typhoid fever, whooping cough, diabetes, cerebral hemorrhage, organic heart disease, pneumonia, diarrheal complaints, Bright's disease, puerperal conditions, suicides, and automobile accidents.

The relatively high September deathrate may be only a temporary condition. There has been no epidemic prevalence of any disease. The abrupt rise in the mortality from heart disease and Bright's disease is difficult to account for. Weather conditions during September, by and large, were less seasonable than usual. This may or may not have been a factor.

The typhoid rate was 8.1 per 100,000, which, while the highest recorded since August, 1923, is nevertheless not an alarming figure for the month of September, the period in which this disease ordinarily reaches its maximum prevalence.

The general deathrate for the large cities of the United States was 10.7 per 1,000 in September, which is about the same as that recorded a year ago and slightly above the August figure of 10.5. More cases of diphtheria, poliomyelitis, scarlet fever, and typhoid fever were recorded than in August, but there was less malaria, measles, smallpox and whooping cough. Compared with September, 1923, there were more cases of poliomyelitis, scarlet fever, and smallpox, with less diphtheria, influenza, malaria, measles, typhoid fever and whooping cough.

Poliomyelitis prevails to an unusual extent in a number of states. In Massachusetts, 70 cases were reported during the first three weeks of September, as compared with 18 during the corresponding period in August. In New York, case reports increased from 154 to 191 and in Illinois from 20 to 43. The opening of the schools was postponed in Clinton, Iowa and in Norfolk, Va. There was an outbreak of the disease in Monroe, Wis., and the Medical Officer of Health in the province of Ontario has been urging every one to take precautions on account of the presence of this disease in a number of cities. The outbreak in central and western New York appears to be subsiding.

Smallpox declined in most of the states for which figures are available. An outbreak of the disease in virulent form in Camden, N. J., and vicinity, prompted the State Board of Health to renew its recommendation for state-wide vaccination. In Rochester, N. Y., a vaccination station was opened by the Health Bureau on account of the discovery of several cases.

METROPOLITAN LIFE INSURANCE COMPANY.

Deathrates† per 100,000 for Principal Causes, Premium-paying Business in Industrial Department. (Annual Basis.)

MONTHS OF AUGUST AND SEPTEMBER, 1924, AND OF SEPTEMBER, 1923.

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED†			
	Sept. 1924	Aug. 1924	Sept. 1923	Year 1923
TOTAL—ALL CAUSES	834.5	730.2	786.2	928.2
Typhoid fever	8.1	6.0	7.8	5.1
Measles	.6	1.7	2.4	9.5
Scarlet fever	1.2	1.8	2.1	4.4
Whooping cough	8.5	6.1	7.6	7.4
Diphtheria	7.3	5.7	9.9	15.5
Influenza	3.6	4.0	3.3	30.3
Tuberculosis (all forms)	88.9	90.9	97.2	110.1
Tuberculosis of resp'y system	78.2	78.9	87.2	99.7
Cancer	72.8	61.3	73.5	71.8
Diabetes mellitus	14.2	11.4	12.3	16.0
Cerebral hemorrhage	52.0	46.9	47.9	61.2
Organic diseases of heart	108.9	95.3	91.9	127.3
Pneumonia (all forms)	37.6	32.3	31.6	83.9
Other respiratory diseases	9.7	7.6	10.1	13.9
Diarrhea and enteritis	71.8	49.8	64.9	28.2
Bright's disease (chronic nephritis)	59.4	49.2	57.2	68.8
Puerperal state	14.8	11.9	14.4	17.7
Suicides	8.0	5.0	7.6	7.3
Homicides	7.1	7.1	6.9	7.3
Other external causes (excluding suicides and homicides)	63.2	66.6	61.9	62.9
Traumatism by automobile	18.8	14.8	17.4	15.3
All other causes	196.8	169.7	175.6	179.4

†All figures include infants insured under one year of age.

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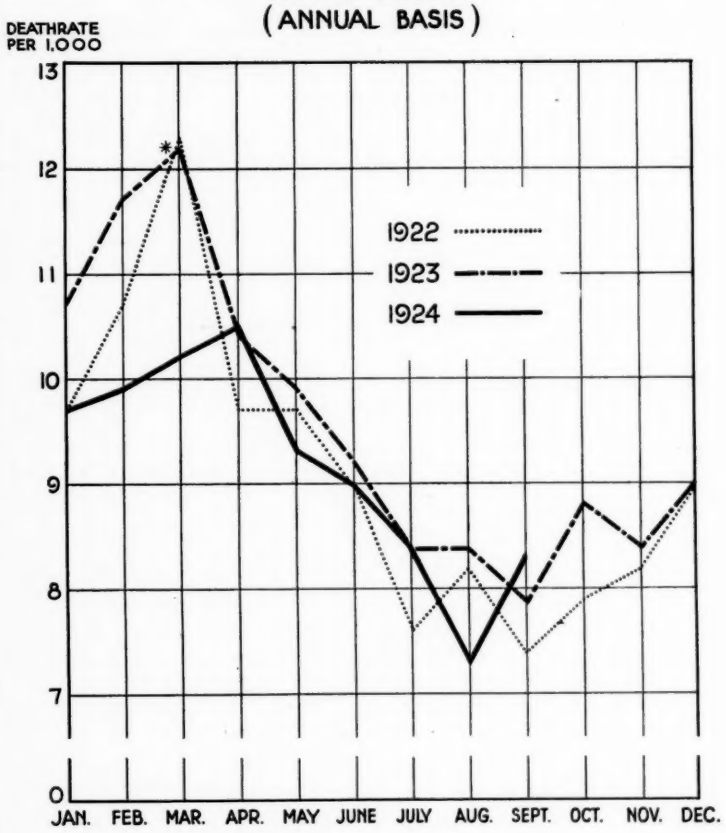
DEATHRATE PER 1,000 *in* SPECIFIED MONTHS *of* 1922, 1923, 1924

METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT
(ANNUAL BASIS)



	1922	1923	1924		1922	1923	1924
JAN.	9.7	10.7	9.7	JULY	7.6	8.4	8.4
FEB	10.7	11.7	9.9	AUG.	8.2	8.4	7.3
MAR	12.3	12.2	10.2	SEPT.	7.4	7.9	8.3
APR	9.7	10.4	10.5	OCT.	7.9	8.8	
MAY	9.7	9.9	9.3	NOV.	8.2	8.4	
JUNE	9.0	9.2	9.0	DEC.	9.0	9.0	

* Beginning with March, 1923, figures include mortality of infants under one year of age.

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